# MILK-ENHANCING FEEDSTUFF AND METHOD

## FIELD OF THE INVENTION

[0001] The invention relates generally to synthesized feedstuffs for ruminants, and more particularly to feed compositions containing high quality inedible egg products as the main ingredient and to a method of producing and feeding the same.

## BACKGROUND OF THE INVENTION

[0002] In the field of milk production for commercial uses, farmers are paid for the milk that their ruminant animals produce in part based upon the butterfat and milk protein content of that milk. It is therefore important to such farmers to maximize the butterfat content or the milk protein content, or both, of their animals' milk. Previous efforts to increase butterfat and/or milk protein content have generally comprised increasing the levels in ruminant diets of coarse fiber ingredients, or buffer supplements such as sodium bicarbonate and magnesium oxide when coarse fiber feeds are not available. This is because high fiber rations produce high levels of acetic acid in the rumen, acetic acid being the primary precursor to butterfat.

[0003] Prior efforts to increase butterfat percentage have also comprised using expensive, highly processed feed products that increase the herdsman's production costs and thereby diminish the return yielded by the higher market price for the improved butterfat percentage milk. These prior efforts also have yielded only small improvements in butterfat and/or milk protein percentage and may introduce undesirable byproducts into the ruminant's milk. This latter consideration is important to herdsmen in today's market because modem consumers are becoming increasingly conscious of and concerned by any unnatural byproducts contained in the milk they purchase.

[0004] Some examples of such prior efforts include the addition of high protein sources to the ruminant's diet such as soybean meal, rumen-protected biologically active substances such as amino acids, and alkali treated proteinaceous feed supplements. Examples of these types of compositions can be found in U.S. Pat. No. 4,225,620 to Rawlings et al., U.S. Pat. No. 5,236,717 to Vinci, U.S. Pat. No. 5,244,681 to Vinci et al., U.S. Pat. No. 5,250,307 to Cummings et al., and U.S. Pat. No. 5,871,773 to Rode et al.

[0005] These supplemental ingredients are highly perishable, as a general rule, which requires the farmer to purchase small quantities frequently or invest in refrigerated storage facilities. These drawbacks further increase the cost of feeding such supplements because farmers must invest significant time and energy both maintaining adequate fresh supplies of the supplements and measuring and mixing the supplement materials with the ruminants' regular rations.

[0006] These prior art compositions therefore leave significant room for improvement in terms of composition, manufacturing method, and feeding method. The present invention is addressed to such improvement.

## SUMMARY OF THE INVENTION

[0007] The present invention relates to egg-based feed compositions for lactating ruminants that consist essentially of a high quality inedible egg product or products in an amount from about 1% to 100% by weight and comprise at least one ingredient selected from the group consisting of milk products, cereal grain or cereal grain products, fruit pectin, other carbohydrates, fiber, fat, urea, electrolytes, vitamins, minerals, yeast, and other animal protein and/or vegetable protein as the balance of the composition. The feed composition may be pelletized or unpelletized.

[0008] The provision of high quality inedible egg in the combinations of the present invention imparts a desirable amino acid profile to the feedstuffs and yields a highly palatable ruminant feed. When fed to ruminant animals, these feed compositions are capable of increasing the butterfat percentage of the animals' milk. These feed compositions are also capable of increasing the milk protein percentage of the animals' milk. Further, when the instant compositions comprise a complete feed, with or without a forage or silage element, substantial labor savings in terms of feed preparation may be enjoyed thereby.

[0009] The present invention also relates to a method of increasing butterfat percentage and milk protein percentage in lactating ruminants. The method comprises the steps of preparing an egg-based feed composition for a lactating ruminant producing milk with a butterfat percentage that consists essentially of a high quality inedible egg product or products in an amount from about 1% to 100% by weight and comprise at least one ingredient selected from the group consisting of milk products, cereal grain or cereal grain products, fruit pectin, other carbohydrates, fiber, fat, urea, electrolytes, vitamins, minerals, yeast, and other animal protein and/or vegetable protein as the balance of the composition; and feeding the egg-based feed composition to the lactating ruminant to thereby obtain a second butterfat percentage of said milk that is higher than said butterfat percentage.

[0010] Additionally, the present invention includes a method of preparing a high quality inedible egg product for use in feed products for lactating ruminants. This method comprises the steps of providing at least one inedible egg; denaturing said at least one inedible egg; refrigerating said at least one inedible egg; and pasteurizing said at least one inedible egg.

[0011] These and other objects, advantages, and features are accomplished according to the compositions and methods disclosed in the following description of the preferred embodiments of the present invention.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0012] For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the preferred embodiments thereof, and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations, modifications, and further applications of the principles of the invention being contemplated as would normally occur to one skilled in the art to which the invention relates.

[0013] Before proceeding further, those of ordinary skill in the art will recognize that feeding the feed compositions as hereinafter more fully described can improve the butterfat and milk protein content of any lactating ruminant's milk. It